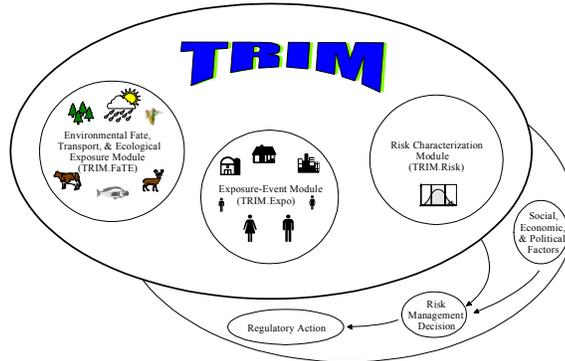


TRIM

Total Risk Integrated Methodology

TRIM.FaTE User's Guide



This guide is maintained by U.S. EPA, Office of Air Quality Planning and Standards.

INTRODUCTION

The *TRIM.FaTE User's Guide* is part of EPA's series of documentation for the Total Risk Integrated Methodology (TRIM) modeling system. This document provides information to assist the user of the TRIM Fate, Transport, and Ecological Exposure (TRIM.FaTE) model. In general, the information presented is based on EPA's experience with the test applications of TRIM.FaTE that have been implemented to date. Key topics related to running TRIM.FaTE and setting up a scenario are covered. However, this document is not meant to provide a comprehensive explanation of every aspect of TRIM.FaTE. Furthermore, the information included in this document should be considered subject to change as additional model applications are completed and the TRIM.FaTE model evolves.

This document is divided into 16 "modules" that cover selected topics involved with setting up a TRIM.FaTE scenario. Fourteen of these modules provide assistance to the user on specific topics; one other module compiles an array of additional helpful hints and caveats for users. The final module lists and provides brief definitions for the model's input parameters as stored in the current library. A complete list of the modules and a brief description of the content of each is presented in the Table of Contents. This version of the TRIM.FaTE User's Guide is organized as a set of modules in order to clarify the topics and types of information that are presented, facilitate their use, and more easily accommodate their update.

Several key terms that are used throughout this set of User's Guide modules are defined in the text box on the following page. In addition, the user is strongly encouraged to review both volumes of the TRIM.FaTE Technical Support Document for detailed information on TRIM.FaTE's conceptual basis, structure, and components.¹

¹TRIM.FaTE Technical Support Document, Volume I: Description of Module. EPA-453/R-02-011a. Office of Air Quality Planning and Standards. September 2002.

TRIM.FaTE Technical Support Document, Volume II: Description of Chemical Transport and Transformation Algorithms. EPA-453/R-02-011b. Office of Air Quality Planning and Standards. September 2002.

KEY TRIM.FaTE MODELING TERMINOLOGY

Algorithm: A mathematical expression that quantitatively describes the transfer of chemical mass between compartments or the transformation of chemical mass within a compartment. Algorithms are, in essence, the mass transfer and transformation formulas used by the model.

Category: A hierarchical classification for objects ordered from most general to most specific, with each level separated by a vertical bar ("|"). Categories are used in TRIM.FaTE to specify which objects are applicable for a certain purpose. For example, a chemical might have a category of "metal" or "organic | aldehyde;" a biological organism might have a category of "bird" or "mammal | rodent."

Compartment: The TRIM.FaTE modeling unit that contains chemical mass. Chemical mass is transported between and transformed within compartments; a specific compartment is characterized by its physical and spatial composition and its relationship to other compartments.

Library: A TRIM.FaTE file that contains the objects available for building a simulation: algorithms, chemicals, compartments, sources, and property types.

Link: A "connection" that allows the transfer of chemical mass between compartments, the degradation of a chemical present in a compartment (where the mass is then transferred to a degradation sink), or the transformation of one modeled chemical to another modeled chemical.

Object: Any component that can be defined in TRIM.FaTE, such as a compartment, a link, a property type, or an algorithm. Objects are the basic "building blocks" of a TRIM.FaTE simulation.

Outdoor Environment: The environment that is used for a simulation. This includes the volume elements defined for the modeling region, the compartments, links, and algorithms that define the mass transfer relationships in the scenario, and the chemicals, sources, and sinks included in the scenario.

Project: A computer framework for saving one or more scenarios, including all of the data properties for those scenarios.

Property: Information that is defined about a specific TRIM.FaTE object (e.g., vapor pressure of a chemical, ingestion rate of a specific biotic compartment, applicable receiving compartment type for an algorithm).

Property Type: Each property has a single property type that defines the name, type of data, units, default value, and minimum and maximum values for the property.

Scenario: A specified set of conditions (e.g., spatial, temporal, environmental, source, chemical) used to define the model setup for a particular simulation or set of simulations.

Simulation: A single application of a model to estimate environmental conditions based on a given scenario.

Sink: A special kind of compartment that accounts for chemical mass no longer available for transport or uptake within a scenario. There are three types of sinks: advection sinks, flush rate sinks, and degradation/reaction sinks.

Source: An external component that introduces chemical mass directly into a compartment.

Transfer Factor: A quantitative factor in units of inverse time that describes, for a first-order transfer between two compartments, the instantaneous flux of modeled chemical per amount of the chemical in the sending compartment.

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